

Broiler Litter Use in Pasture: Do's and Don'ts

Rishi Prasad, Ph.D.

Associate Professor & Nutrient Management Specialist

Department of Crop, Soil, and Environmental Sciences & Animal Science Department, Auburn University

The Alabama broiler industry produces about 2 million tons of broiler litter annually. This litter serves as a popular nutrient source for cattlemen to fertilize pastures and haylands. Its availability varies throughout the year based on the cleanout schedules of individual growers. Additionally, the nutrient content of litter can differ significantly, making it less reliable as a fertilizer compared to commercial options.

Growers should consider the following points when applying litter to their fields.

What is broiler litter? Broiler litter is a mixture of chicken feces, urine, bedding material (such as pine shavings, or peanut hulls or saw dust), spilled feed and feathers. The broiler litter is cleaned out either as a caked litter or a total cleanout. The caked litter has less nutrient value than the total cleanout litter.

What nutrients are present in Broiler litter? Broiler litter typically contains 11 essential plant nutrients - nitrogen (N), phosphorus (P), and potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), copper (Cu), zinc (Zn), iron (Fe), manganese (Mn), and boron (B). The amount of nutrient present in litter varies with the number of flocks between cleanouts, number of birds per flock, the amount and type of bedding material used, moisture content of litter, the age of litter and storage time, and pH.

How to determine the nutrient value of broiler litter: It is always a good idea to have litter analyzed for its nutrient content by sending representative samples to a laboratory. Guessing the nutrient content by visual inspection can lead to under or over application. Laboratories typically report moisture content along with nitrogen (N), phosphorus (P₂O₅), and potassium (K₂O) levels on a wet or as-sampled basis. For example, a 3-3-2 analysis indicates that one ton of litter contains 60 lbs of N, 60 lbs of P₂O₅, and 40 lbs of K₂O on as-sampled basis.

What is the best time to apply broiler litter? The ideal time to apply litter is 10 days before spring greenup in case of pasture and 10 days before planting a row crop. The nutrients in litter can be viewed as being stored in two compartments: one with a fast release and another with a slow release. The fast release compartment provides nutrients within a matter of 10 days whereas slow release compartment may take months or even years. Most farmers should take the advantage of nutrient released from the fast release compartment by synchronizing the litter application timing close to the timing of spring greenup.

How much litter is too much ?

The fertilizer grade of litter varies quite a bit, but for simplicity, its book value is 3-3-2. Since litter is a low-grade fertilizer, applying large quantities can lead to nutrient imbalances. For instance, if a bermudagrass hay grower applies 5 ton of litter per acre to satisfy the 300 lbs N requirement for a 6-ton hay yield, this application also introduces 300 lbs of P₂O₅ and 200 lbs of K₂O per acre. However, the bermudagrass removes only 12 lb P₂O₅ per ton, meaning that from a 6-ton yield, only 72 lbs of P₂O₅ will be utilized. This leaves 228 lbs of P₂O₅ to accumulate in the soil. If this 5-ton application is repeated annually, it can lead to a significant buildup of P₂O₅, and eventually becomes an environmental concern.

When should be litter application avoided on farmlands?

Litter application should be stopped under following conditions:

- If there has been a repeated annual application of litter for more than 5 years.
- If the soil test phosphorus levels fall under “high” “very high” or “extremely high” and when phosphorus saturation ratio is >0.10 (P saturation ratio is the molar ratio of P to Fe +Al). Typically, this is assessed by conducting Mehlich-3 extractions on the soil, followed by measuring the levels of phosphorus, iron, and aluminum.

- Litter application should be avoided during winter months as Alabama receives more than 30 inches of rain during this time. More than 50% of phosphorus in litter is water soluble. For example, if a lab analysis shows 3% P₂O₅ in the litter, then 1.5% of that is water-soluble. This means that for every ton of litter applied, 30 lbs of P₂O₅ can dissolve in water and potentially runoff if heavy rain occurs shortly after application. Furthermore, plants are dormant in winter, resulting in minimal nutrient uptake. Therefore, any nutrients released from litter during this season are not beneficial to the plants and have a high likelihood of being washed away by rainwater.
- Litter should not be applied before a heavy rain forecast.

Upcoming County Meetings:

December 6

St. Clair

Celebrations, Pell City, AL
6:00 p.m.

December 7

Walker County

Bevil Cafe, Sumiton, AL
6:00 p.m.

January 11

Cullman County

Stonebridge Farms, Cullman, AL
6:00 p.m. (Dinner at 5:00 p.m.)

January 18

Colbert County

Clarion Inn, Sheffield AL
6:00 p.m.

January 24

Limestone County

The Beasley Center, Athens, AL
6:30 p.m.

January 25

Lauderdale County

Crosspoint Church of Christ
Florence, AL
6:00 p.m.

January 25

Franklin County

AW Todd Center
Russelleville, AL
6:00 p.m.

January 25

Lowndes County

Hayneville Baptist Church
Hayneville, AL
5:30 p.m.

February 27

Baldwin County

Baldwin County Fairgrounds
Robertsdale, AL
6:00 p.m.

April 1

Montgomery County

Whippoorwill Venue, Mathews, AL
6:00 p.m.



Got Tubs? Purina® Protein Tubs

Accuration® Hi-Fat Block

- Self-fed product
- Poured-molasses tub
- 25% protein block
 - Balance nutrient deficiencies in forages
- 10% added fat
 - High energy nugget delivers additional fat to maintain body condition and support reproduction
 - Concentrated rumen-protected fat source for optimal energy utilization

When to use:

- Late fall grazing
- Decreased forage quantity and/or quality
- Corn stalk supplementation

Feeding directions:

- 1.0–3.0 pounds per head daily
- 1 tub/15–20 cows
- Provide free-choice Wind and Rain® Mineral
- Intake regulated by nutritional needs dependent on quality and quantity of forage

Visit your local Purina dealer or purinamills.com for product information and availability.

RangeLand® 17 Tub

- All-natural, self-fed protein tub
- 17% protein
- Cooked molasses tub for consistent intake and nutrient delivery
- Hi-Mag option available

When to use:

- Maintain body condition
- Cattle on dormant or poor-quality forage (< 8% CP)
- Late fall grazing

Feeding directions:

- 0.5–1.0 pounds per head daily
- 1 tub/25–30 cows

RangeLand® 30-13

- Self-fed protein tub
- 30% protein (13% NPN)
- Cooked molasses tub for consistent intake and nutrient delivery
- Altosid® option available

When to use:

- Cattle in good condition
- Cattle on dormant or poor-quality forage (< 8% CP)

Feeding directions:

- 0.5–1.0 pounds per head daily
- 1 tub/25–30 cows

RangeLand® 38 Hi-E Tub

- Self-fed product
- Cooked-molasses tub for consistent intake and nutrient delivery
- 38% protein
- 12% added fat
 - Provides additional energy to cattle on low to medium quality forages

When to use:

- Cattle in good condition but nutrient requirements are increasing
- Cattle on fair to medium quality forage

Feeding directions:

- 0.5–1.0 pounds per head daily
- 1 tub/25–30 cows

